EFFECT OF CLIMATIC CONDITIONS ON THE BLOOMING AND RIPENING DATES OF FRUIT TREES

A THESIS

PRESENTED TO THE FACULTY OF THE GRADUATE SCHOOL
OF CORNELL UNIVERSITY FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

BY

HARRY ASHTON PHILLIPS

Published as Cornell University Agricultural Experiment Station Memoir 59, June, 1922.

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EFFECT OF CLIMATIC CONDITIONS ON THE BLOOMING AND RIPENING DATES OF FRUIT TREES

EFFECT OF CLIMATIC CONDITIONS ON THE BLOOMING AND RIPENING DATES OF FRUIT TREES[1]

H. A. PHILLIPS

In making public, in this memoir, some of the phenological data obtained from many localities in the United States and Canada by H. P. Gould,[2] of the United States Department of Agriculture, emphasis is placed on the blooming and ripening dates and the length of the growing period—the period between the blooming and ripening dates. In the accompanying tables are included, also, records of the opening of the leaves, the formation of the terminal bud, and the date of the first autumn frost. The nature of the problems here involved will be elucidated by reference to a few of the many phenological studies that have been made.

In 1817 Dr. Jacob Bigelow requested correspondents in various parts of the country to note the time of flowering of the common fruit trees and a few other plants. Most of the reports were received from States along the Atlantic Coast. One report was received from Alabama. From these reports of one year only, Dr. Bigelow concluded that the "difference of season between the northern and southern extremities of the country is not less than two months and a half." No account was taken of altitude, but Dr. Bigelow concluded that "difference of longitude does not seem very materially to affect the floral calendar within the United States." (Bigelow, 1817.) [3]

Abbe (1905) has briefly reviewed a considerable amount of literature on phenology, with particular emphasis on the effect of heat units in bringing a plant up to a certain stage of growth and development. Among the prominent investigators quoted by Abbe is Karl Fritsch, of Austria, who considered the important stages in perennials and forest trees to be (1) the first flower and (2) the first ripe fruit. Fritsch considered temperature and moisture the chief factors in the development of the vegetative part of the plant, and direct sunlight the chief factor in

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[1] Also presented to the Faculty of the Graduate School of Cornell University, August, 1920, as a major thesis in partial fulfillment of the requirements for the degree of doctor of philosophy.

[2] Beginning in 1902, Mr. Gould induced observers from many sections of North America to keep phenological records on blanks furnished by him. These introductory records were tabulated in his office for a period of ten years. Pressure of other work prevented him from getting the material ready for publication, and so in the autumn of 1919 the records were furnished to Cornell University to be prepared for publication. It has not been possible to make complete use of the data furnished, but the study has been limited to a few representative varieties of each kind of fruit. Mr. Gould desires here to express his appreciation to the many workers who assisted him in gathering these data.

[3] Dates in parenthesis refer to Literature Cited, page 1396.

the reproductive process. He thought plants are earlier by about four-tenths of a day for each degree of longitude westward.

Many workers using different methods concluded that the bringing of a plant up to a certain point in its annual activities is due primarily to the number of heat units it has received.

Quetelet (1849) concluded that there are many factors in combination to produce periodic changes in plants, but that temperature is the most important and may serve to explain retardations for stations until more information is possessed concerning other factors making up climate. He concluded further that vegetation in general is retarded about four days for each degree of increase in latitude or for each 100 meters of increase in altitude.

Hopkins (1918), working mainly with insects though also with the wheat plant in the consideration of the activities of the Hessian fly, has concluded that epochs in plant and animal activities appear about four days later for each degree of latitude and for each 400 feet of altitude, and that there is a country-wide average variation of about four days to five degrees of longitude, earlier westward and later eastward from a median point in the continent. He of course recognizes that there are many variations from the average. With deciduous trees, such even response to differences in latitude and altitude would be expected only if at no time when a temperature high enough for growth might prevail there existed in the tissue a condition inhibiting response to such temperature.

In this study, climatic conditions must necessarily be considered as a unit. With the exception of temperature, practically nothing has been done to integrate the record in order to show what part any one factor has played in a plant's life. Such a problem is too complex for this kind of study. From the mass of materials and records collected from 1902 to 1911, inclusive, forty-six tables have been prepared relating to epochs in the annual activities of the apple, the pear, the peach, the cherry, and the plum. Of the many varieties in the records from the different sections, only those were used that were in the records for most of the sections. Three leading varieties in each group were traced in a north-south direction in three sections of the country. As far as possible, the same varieties were studied in each section so as to avoid variations peculiar to a variety. For example, the Winesap, the Yellow Transparent, and the Ben Davis were chosen as representatives of the apple group. In the Atlantic section the Baldwin was added because of its importance in part of that section. In the other groups this plan could not be followed as closely as with the apple. One section studied was along the Atlantic Coast, mainly east of the principal

mountain ranges, and extended from Florida to Canada; the second was along the Mississippi Valley from Mississippi to Minnesota and Wisconsin; the third was through California, Oregon, and Washington. The tables appear in the appendix, on pages 1397 to 1416.

RELATIVE INFLUENCE OF DIFFERENCE IN ALTITUDE, LATITUDE, AND LONGITUDE ON BLOOMING DATES

The time of full bloom for the apple, the pear, the peach, the cherry, and the plum at different latitudes is shown in figures 164, 165, and 166. The varieties indicated were selected as the most typical representatives of the different sections. The full-bloom dates for the various fruits are generally much farther apart in the South and tend to converge toward the north. An exception is in southern California, where the altitude is great enough to overcome conditions that might be caused by the latitude and where the influence of the Pacific Ocean is involved. The latitude at which the blooming dates for the different fruits tend to converge is about 42° 30′ for the Atlantic section and is very marked. In the Mississippi section it is about 41°.

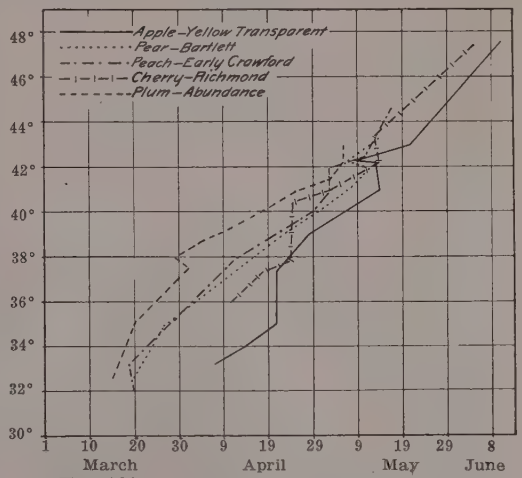

FIG. 164. ATLANTIC COAST SECTION. DATES OF FULL BLOOM FOR DIFFERENT LATITUDES. AVERAGE FOR TEN YEARS, 1902-1911

Considerable influence on the epochs in plant activities may be attributed to altitude. An average of all the fruits studied shows that there is a difference in the blooming dates of one day for every 101 feet of altitude, the season being retarded as the altitude increases. This agrees very closely with the results obtained by Hopkins (1918). In correcting for the influence of altitude, then, the figures given by Hopkins may be used; that is, one day may be added to the blooming

date for each 100 feet of elevation. This has been done in figures 167, 168, and 169. The curves are still far from being even, and so it is certain that other local influences than altitude must also be involved.

The delay in blooming due to the difference of a degree of latitude, as shown in the following table, is not the same for different fruits or for different varieties of the same fruit:

AVERAGE DELAY IN BLOOMING CAUSED BY AN ADDITIONAL DEGREE OF LATITUDE

Fruit	Delay in blooming for 1 degree of latitude (in days)			
	Atlantic Coast	Mississippi Valley	Pacific Coast	Average for the three sections
Apple:				
Winesap	4.8	4.2	3.5	
Yellow Transparent	5.0	3.1	4.8	
Baldwin	7.0	3.5	4.3	
Ben Davis	4.8	.....	.....	
Average	5.4	3.6	4.2	4.4
Pear:				
Kieffer	4.2	7.4	.....	
Bartlett	5.1	5.8	3.2	
Angouleme	9.2	8.6	.....	
Anjou	.....	.....	4.0	
Winter Nelis	.....	.....	3.9	
Average	6.2	7.3	3.7	5.7
Peach:				
Elberta	3.8	4.1	1.7	
Early Crawford	4.0	4.5	1.9	
Champion	6.4	4.6	.....	
Alexander	.....	.....	1.9	
Average	4.7	4.4	1.8	3.6
Cherry:				
Early Richmond	6.7	4.6	4.0	
Montmorency	7.1	5.4	.....	
English Morello	4.2	5.4	.....	
Black Tartarian	.....	.....	3.7	
Napoleon	.....	.....	4.3	
Average	6.0	5.1	4.0	5.0
Plum:				
Abundance	5.0	2.6	.....	
Wild Goose	8.9	4.8	.....	
Red June	4.3	3.6	4.2	
Agen	.....	.....	2.1	
Wickson	.....	.....	3.5	
Average	6.1	3.7	3.3	4.3
General averages	5.7	4.8	3.4	4.6

With the exception of the Pacific Coast, the delay is greater than the four days for one degree observed by Hopkins. An examination of the graphs, however, will show that the delay for a degree of latitude is much greater north of latitude 36° to 38° than in the more southerly latitudes. The average full-bloom dates for the different varieties on certain parallels of latitude in the three sections studied are given in the following table:

AVERAGE FULL-BLOOM DATES FROM WEST TO EAST

Latitude	Pacific section	Mississippi Valley section	Atlantic section
35°	March 11	March 16	March 19
36°	March 14	March 16	March 24
38°	March 19	March 30	April 10
40°	March 18	April 11	April 19
41°	March 22	April 19	April 26
42°	March 27	April 27	May 5
Average of all parallels	March 19	April 4	April 11

It appears from this table that the full-bloom period of fruit-bearing trees is later eastward. South of latitude 36°, however, the difference is very slight.

RELATION OF THE REST PERIOD TO THE BLOOMING DATE

In the more southerly latitudes the blooming dates do not follow the rules suggested by Hopkins either as to latitude or as to longitude. In fact, it seems certain that the plants must have been subjected to much more heat before coming into bloom in the south than in the north. Thus, in the Mississippi Valley the ten-years average blooming time for apples is as early at latitude 38° as at latitude 32°, and, after correcting for altitude, the blooming date of the peach is nearly the same at latitude 32° as at latitude 36°.

Palladin (1918) notes similar conditions in his observations of early and late perennials in Europe. Referring to his observations he says this "may be explained by pointing out that the period with temperatures below the freezing point of water is also important in the develop-

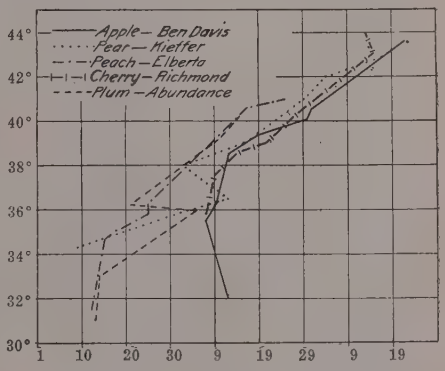

FIG. 165. MISSISSIPPI VALLEY SECTION. DATES OF FULL BLOOM FOR DIFFERENT LATITUDES. AVERAGE FOR TEN YEARS, 1902-1911

ment of perennials. This is a period of low activity but not one of complete inactivity, and various chemical transformations are completed during the cold winter, which prepare the plant for the active growth of spring." Again, he says, "direct experiment shows that higher temperature alone is not sufficient to bring plants out of the resting condition." Howard (1910) and others have shown that deciduous trees have rest periods of varying lengths. With most species this rest may be broken by various treatments, such as freezing, drying, or etherizing. Chandler (1913) has shown that with peaches the ending of this rest period may be delayed by increasing the vigor of the trees; also, that the ending of this period is a very gradual process; thus, while the buds may respond to growing temperatures in January, they will respond much more rapidly if such temperatures do not come until February or March. Coville (1920) has shown that the rest period may be broken, with some plants at least, by continuous exposure to temperatures too low for growth but above the freezing point. It seems probable that the blooming of some of the fruit trees is delayed in the more southerly latitudes because there is not enough cold weather to bring the plants completely out of their rest period.

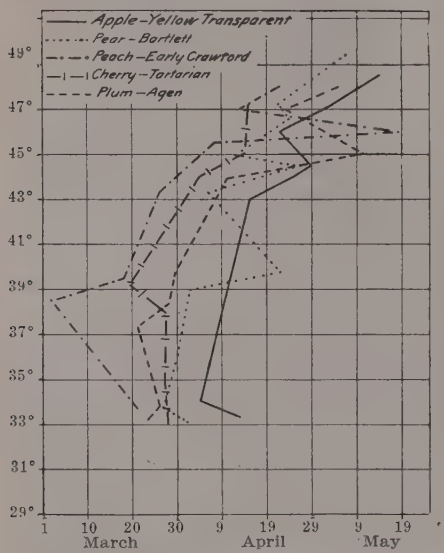

FIG. 166. PACIFIC COAST SECTION. DATES OF FULL BLOOM FOR DIFFERENT LATITUDES. AVERAGE FOR TEN YEARS, 1902-1911

RELATION OF CLIMATE TO RIPENING DATES

The correlation between climate and the ripening date is more difficult to study than that between climate and the full-bloom period. The

full-bloom dates for the different fruits are reasonably near together, while the ripening dates may be rather far apart and many seasonable differences must be considered in the completion of the epoch. For example, the Ben Davis and the Yellow Transparent apples bloom so nearly at the same time that cross-pollination may be accomplished, yet the ripening time may be from fifty to sixty days apart. Earlier sorts of fruits may ripen and be gone before seasonal troubles overtake them. Some places are more subject to drought than others, and this condition may tend to shorten the length of the season, while in most fruit sections that depend upon the rainfall there is usually enough moisture in the springtime to carry all sorts through the bloom period. Whether the orchard is in sod or is tilled, will influence the length of the growing season but will not materially affect the time of blooming. Some fruits require few heat units to develop them, while others require a considerable number. Thus it appears that there are few-

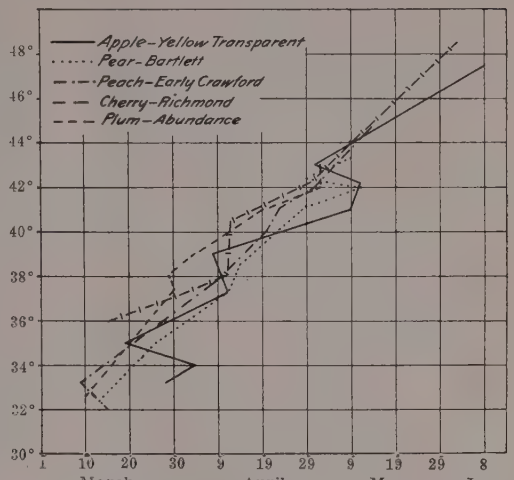

FIG. 167. ATLANTIC COAST SECTION. DATES OF FULL BLOOM FOR DIFFERENT LATITUDES, CORRECTED FOR ALTITUDE. AVERAGE FOR TEN YEARS, 1902-1911

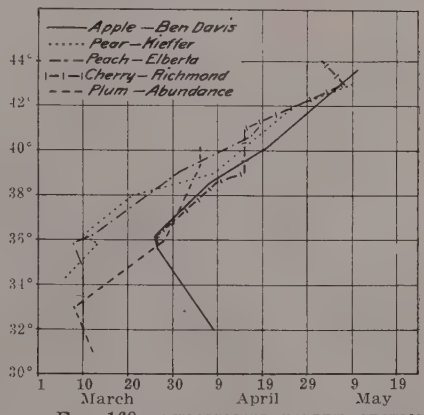

FIG. 168. MISSISSIPPI VALLEY SECTION. DATES OF FULL BLOOM FOR DIFFERENT LATITUDES, CORRECTED FOR ALLTITUDE. AVERAGE FOR TEN YEARS, 1902-1911

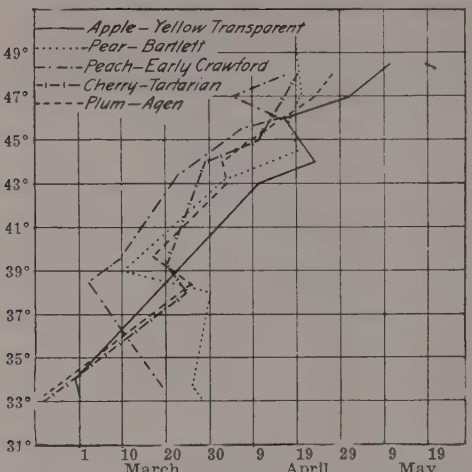

FIG. 169. PACIFIC COAST SECTION. DATES OF FULL BLOOM FOR DIFFERENT LATITUDES, CORRECTED FOR ALTITUDE. AVERAGE FOR TEN YEARS, 1902-1911

er climatic factors to deal with up to the blooming period than through the development of the fruit.

The conditions relative to the picking date, as reported by the numerous observers, are given in figures 170, 171, and 172. The records sent in are fairly complete and give a rather comprehensive idea of the facts as they exist. When two picking dates were sent in, only the first was considered.

These graphs present a very different aspect from the full-bloom graphs. In the full-bloom graphs, the curves are the farthest apart in the Pacific section; while for the picking dates, the curves are somewhat closer together in the Pacific section. In all the sections, the curves for the picking dates of the different fruits are far apart, and there is not the tendency to converge toward the north that was noticeable in the full-bloom graphs, especially for the Atlantic and Mississippi sections. Variation in altitude and local weather conditions explain to a large degree the more or less sharp changes in the curves.

In all three sections, the cherry ripens first but there seems to be no particular order for the others. The Yellow Transparent apple is in advance of the peach in the Atlantic and Mississippi sections, while in the Pacific section these fruits cross each other.

The effect of climatic conditions caused by a difference in altitude shows interesting results on the plum in California. The Agen plum apparently is ripe in the State of Washington before it is in southern California. The observations recorded for latitude 33°10′ are at an altitude of 3000 feet, while those for latitude 48°0′ are at an altitude of 200 feet. (Table 44, page 1415.)

The differences in ripening dates between the northern and southern points studied, for two varieties of fruits in each group, are shown in

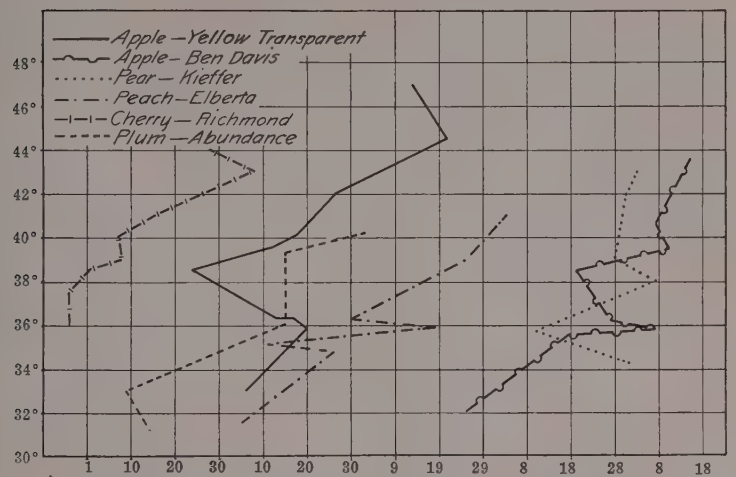

FIG. 170. ATLANTIC COAST SECTION. DATES OF PICKING FOR DIFFERENT LATITUDES. AVERAGE FOR TEN YEARS, 1902-1911

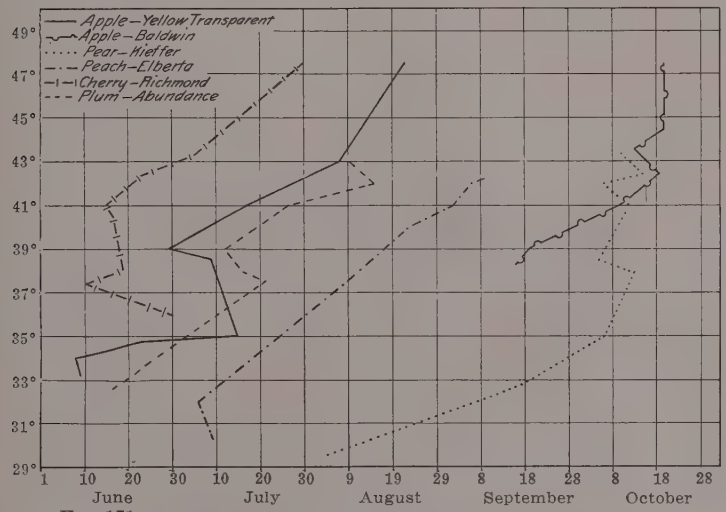

FIG. 171. MISSISSIPPI VALLEY SECTION. DATES OF PICKING FOR DIFFERENT LATITUDES. AVERAGE FOR TEN YEARS, 1902-1911

the table opposite. In order to secure uniformity for comparison, the extreme north and south points were reduced to the same altitude. The actual number of days are shown in the first column, while the second column gives the number after reducing. The same relations are shown in the third and fourth columns, for the average retardation.

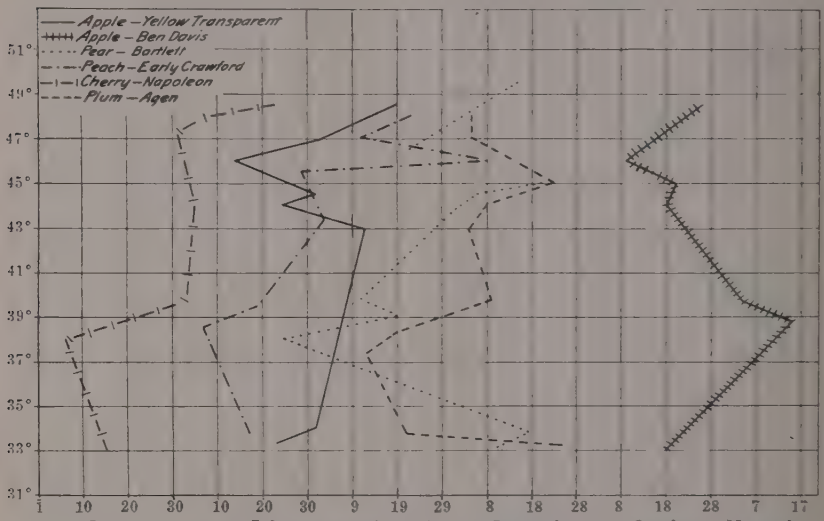

FIG. 172. PACIFIC COAST SECTION. DATES OF PICKING FOR DIFFERENT LATITUDES. AVERAGE FOR TEN YEARS, 1902-1911

The average obtained in this table, using the results after eliminating the variation due to the difference in altitude, is nearly the same as that given by Hopkins. The delay in ripening is 4.1 days for each degree of latitude, and is less than the delay in blooming, which is 4.6 days for each degree of latitude. Using the results obtained without correction for altitude, the delay in ripening is 3.5 days for each degree of latitude, as compared with 4.1 days for each degree of latitude for the blooming period.

TIME BETWEEN FULL BLOOM AND RIPENING

The growing season of the fruit is assumed to be from the time of full bloom to the picking date. On this basis, the number of days has been

DIFFERENCES IN RIPENING DATES BETWEEN THE NORTHERN AND SOUTHERN POINTS STUDIED

Fruit	Number of days from picking date in south to picking date in north	Same, corrected for altitude	Average retardation in days for each degree of latitude	Same, corrected for altitude
ATLANTIC SECTION				
Cherry, Early Richmond	30	33	2.6	4.6
Cherry, Montmorency	17	19	1.9	2.0
Plum, Abundance	54	55	5.2	5.2
Plum, Red June	69	67	7.1	6.9
Peach, Elberta	63	70	5.2	5.8
Peach, Early Crawford	68	71	5.4	5.6
Pear, Kieffer	68	64	4.9	4.7
Pear, Bartlett	23	28	2.8	3.4
Apple, Yellow Transparent	74	82	5.0	5.7
Apple, Baldwin	34	42	3.6	4.4
Average			4.4	4.8
MISSISSIPPI SECTION				
Cherry, Early Richmond	33	32	4.1	4.0
Cherry, Montmorency	29	32	3.6	4.0
Plum, Abundance	48	40	5.2	4.4
Plum, Red June	39	34	5.2	4.5
Peach, Elberta	60	55	6.3	5.8
Peach, Champion	37	32	6.1	5.3
Pear, Kieffer	2	32	0.23	4.5
Pear, Bartlett	42	46	5.2	6.9
Apple, Yellow Transparent	39	41	2.8	2.9
Apple, Ben Davis	51	55	4.4	4.7
Average			4.3	4.7
PACIFIC SECTION				
Cherry, Napoleon	38	70	2.5	4.5
Cherry, Black Tartarian	29	42	2.0	2.8
Plum, Agen	15	43	1.0	2.8
Plum, Italian Prune	17	32	2.1	4.0
Peach, Early Crawford	36	31	2.5	2.2
Peach, Elberta	55	39	3.7	2.6
Pear, Bartlett	5	20	0.31	1.3
Pear, Winter Nelis	24	9	1.7	0.64
Apple, Yellow Transparent	27	69	1.8	4.4
Apple, Ben Davis	8	48	0.51	3.1
Average			1.81	2.8
Average for all three sections			3.5	4.1

calculated for the twenty-four kinds of fruits studied, and the results are given in the last column in the tables appended.

The average growing periods in days for some of the varieties in the three sections are given in the following table:

TIME BETWEEN FULL BLOOM AND RIPENING
(Days)

Fruit	Atlantic section	Mississippi section	Pacific section
Apple:			
Baldwin	143	-----	-----
Yellow Transparent	73	84	100
Ben Davis	155	163	175
Winesap	156	163	170
Pear:			
Angouleme	144	157	-----
Bartlett	126	126	137
Kieffer	167	167	-----
Anjou	-----	-----	151
Winter Nelis	-----	-----	192
Peach:			
Elberta	121	134	139
Early Crawford	109	116	124
Champion	112	118	-----
Alexander	-----	-----	97
Cherry:			
Early Richmond	54	47	59
Montmorency	58	61	-----
English Morello	76	55	-----
Black Tartarian	-----	-----	63
Napoleon	-----	-----	74
Plum:			
Red June	87	94	-----
Wild Goose	89	96	-----
Abundance	100	98	-----
Agen	-----	-----	150
Italian Prune	-----	-----	146
Wickson	-----	-----	130

Where comparisons can be made with the same varieties in the different sections, it is observed that the period between full bloom and ripening is markedly longer in the Pacific section than in the others. In general, in the Mississippi section this period is the next longest, while in the Atlantic section it is the shortest. The average difference between the last two sections is not great. On examination of the appended tables it will be seen that with some varieties the southern parts of the

Atlantic and Mississippi sections record more days between the full-bloom date and the ripening date than do the northern parts. It seems that the length of this period is rather largely determined by the amount of heat units received by the tree and the fruit. However, the other climatic factors modify conditions. The influence of equable weather conditions along the Pacific Coast prevents a rapid increase in heat units, and it takes a longer period of time to accumulate the amount of heat required to develop the fruit. In the Mississippi and Atlantic sections, the insolation is greater in the northern parts of these sections in summer than in the southern parts, and hence the time required to develop the fruit in the north is less than the time required in the south.

SUMMARY

While many factors, such as available food, abundant water supply, pruning, spraying, and tillage, contribute to successful orcharding, there are none of more importance than climatic conditions.

Epochs in fruit-bearing trees are retarded in their development by an increase in altitude. According to the data here presented, the average retardation is one day for every 101 feet.

The average rate of retardation in the blooming period of fruit-bearing trees is 4.6 days for every degree of latitude northerly. The greatest retardation is through the Atlantic States and the least is through the Pacific States.

Epochs are earlier westward, and the lines of full-bloom dates and ripening dates travel in a northeasterly direction.

In the Atlantic and Mississippi sections the rate of retardation is not constant. This is explained by conditions affecting the rest period. From about the 36th parallel southward in the Mississippi Valley and Atlantic sections, there is very little difference in the time of the blooming period.

There is much greater uniformity in the epochs in fruit-bearing trees through the Pacific States, due primarily to the influence of the prevailing westerly winds from the Pacific Ocean.

The ripening dates in any section tend to travel faster than the blooming dates.

The general average range of full-bloom dates at any given place is about three weeks.

The number of days for the development of the ripened fruit is greater in the Pacific section than in the Atlantic and Mississippi sections. Also, with some varieties the number of days is greater in the southern part of the Atlantic and Mississippi sections than in the northern part.

The peach, wherever grown, appears to be more uniform in its development than the other fruits.

The delay in the appearance of all epochs caused by increasing altitude or latitude, except in more southerly latitudes where the rest period delays blooming, suggests that there is involved with fruit trees no such influence of length of daily illumination as that observed by Garner and Allard (1920) with other plants.

ACKNOWLEDGMENTS

The writer wishes to express his appreciation to Dr. W. H. Chandler, who suggested this study and who gave helpful suggestions throughout the investigation; to Dr. W. M. Wilson, of the Department of Meteorology, for suggestions; and especially to Mr. H. P. Gould for the records used in the paper.

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APPENDIX

TABLE 1. APPLE, BEN DAVIS. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
34° 0′	Ga.	1,200	4/11	4/20	4/15 to 4/26	4/ 3	8/15	10/12	10/20	3	175
34°45′	S. Car.	1,000	4/ 4	4/15	4/ 9 to 4/28	3/18	7/31	10/18	11/ 4	8	186
35° 0′	N. Car.	2,200	4/13	4/20	4/11 to 5/ 2	4/15	7/22	9/23	10/17	6	156
35° 0′	N. Car.	4,250	4/26	5/ 6	5/ 2 to 5/12	5/ 5	7/26	10/18	10/ 9	4	165
35° 0′	N. Car.	3,350	4/18	4/28	4/12 to 5/10	4/19	8/13	10/16	10/11	5	171
35°15′	N. Car.	20	3/22	4/ 4	3/25 to 4/16	4/11	4/23	8/23	10/26	4	141
37° 0′	Va.	10	4/11	4/20	.....	3/28	7/25	8/20	10/21	3	122
37°20′	Va.	1,500	4/23	5/ 2	.....	4/23	7/14	10/14	10/16	4	165
38° 0′	Va.	1,500	4/ 8	4/14	.....	4/ 5	6/25	9/25	10/29	4	164
39° 0′	Va.	2,000	4/18	4/24	4/ 6 to 5/ 7	4/ 8	6/13	10/ 5	.....	9	164
41° 0′	Pa.	1,160	5/ 2	5/ 8	5/ 7 to 5/ 8	4/29	7/30	10/12	9/15	2	157
41°10′	Pa.	2,000	5/ 7	5/13	5/ 2 to 5/20	4/27	6/19	10/22	10/ 8	8	162
42° 0′	N. Y.	300	5/10	5/15	5/ 5 to 5/25	5/ 5	8/12	9/28	10/14	7	136
42°15′	N. Y.	1,500	5/17	5/20	5/15 to 5/30	5/ 7	7/ 2	10/15	10/17	7	148
42°15′	N. Y.	150	5/11	5/14	5/ 8 to 5/19	5/ 5	6/30	10/11	10/14	7	150
42° 0′	N. Y.	1,400	5/12	5/18	5/ 5 to 5/26	4/28	7/ 4	10/25	10/16	10	160
43°35′	N. Y.	550	5/24	5/27	5/19 to 6/ 4	5/14	7/31	10/18	10/ 5	4	144
44°30′	(Canada)	25	5/28	6/11	.....	.....	.....	10/22	9/21	2	133
47°30′	(Canada)	175	6/ 9	6/14	6/10 to 6/18	.....	.....	10/20	10/18	3	148

TABLE 2. APPLE, YELLOW TRANSPARENT. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33°15′	Ga.	1,000	4/11	4/ 7	3/23 to 4/22	3/27	.....	6 /9	11/22	5	63
34°45′	S. Car.	1,000	4/ 6	4/17	4/12 to 4/29	3/22	7/28	6/23	11/ 5	8	67
35° 0′	N. Car.	3,300	4/13	4/21	4/ 9 to 5/ 1	4/10	9/ 8	7/15	10/12	3	85
37°20′	Va.	1,000	4/ 6	4/21	4/ 4 to 5/14	6/13	6/14	7/11	11/ 1	5	81
38°30′	Va.	400	4/20	4/26	.....	4/ 7	7/28	7/ 9	10/11	5	74
39° 0′	Va.	2,000	4/21	4/28	.....	4/14	6/16	6/29	.....	5	62
41° 0′	Pa.	450	5/ 7	5/14	5/ 2 to 5/15	5/ 1	7/22	7/29	10/10	5	76
41° 0′	Pa.	500	5/ 9	5/14	5/11 to 5/21	5/ 3	6/30	7/17	10/19	3	64
42°15′	N. Y.	150	5/ 9	5/13	5/ 6 to 5/18	5/ 1	6/26	7/24	10/14	7	72
42°25′	N. Y.	750	5/ 5	5/ 9	4/30 to 5/15	4/28	7/ 6	8/ 1	10/ 9	4	84
43° 0′	N. Y.	1,400	5/11	5/15	.....	5/ 5	7/ 2	8/ 2	10/10	2	79
43° 0′	N. Y.	400	5/14	5/21	5/15 to 5/30	5/ 5	8/19	8/ 7	10/ 4	9	78
47°30′	(Canada)	175	6/ 4	6/10	5/27 to 6/ 8	.....	.....	8/22	10/18	3	73

TABLE 3. APPLE, WINESAP. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
34°20′	Ga.	1,200	4/10	4/20	4/12 to 4/25	4/20	8/30	9/29	10/12	4	162
34°45′	S. Car.	1,000	3/29	4/7	4/ 1 to 5/25	3/27	8/28	10/10	10/28	4	186
35° 0′	N. Car	2,200	4/10	4/17	4/ 8 to 5/ 1	4/16	7/18	9/30	10/17	6	166
37°45′	Va.	1,000	4/11	4/18	4/ 8 to 4/27	3/30	7/ 9	10/ 1	10/20	9	166
39° 0′	Va.	2,000	4/20	4/26	4/10 to 5/ 9	4/ 9	6/13	10/ 3	.....	9	160
41° 0′	Pa.	1,000	5/ 5	5/10	5/ 5 to 5/16	4/30	6/27	10/18	10/ 9	4	161
41°10′	Pa.	2,000	5/ 7	5/13	5/ 2 to 5/20	4/29	6/18	10/28	10/18	8	168
43° 0′	N. Y.	1,400	5/11	5/20	5/ 5 to 5/24	5/ 3	7/ 6	10/22	10/18	10	155
43°35′	N. Y.	550	5/24	5/28	.....	5/16	7/28	8/15	10/10	4	79

TABLE 4. APPLE, BALDWIN. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
38° 5′	Va.	1,000	4/ 8	4/14	.....	4/16	6/25	9/15	10/20	4	154
39° 0′	Va.	2,000	4/23	4/28	4/10 to 5/10	4/13	6/13	9/19	.....	9	144
41° 0′	Pa.	700	5/ 8	5/14	5/11 to 5/16	4/30	6/12	10/ 2	10/19	2	141
41° 0′	Pa.	1,160	4/30	5/ 6	5/ 6 to 5/ 7	4/27	7/25	10/12	9/15	2	159
41°10′	Pa.	2,000	5/ 6	5/13	5/ 1 to 5/21	4/26	6/18	10/ 5	10/18	8	145
42°15′	N. Y.	150	5/10	5/14	5/ 7 to 5/20	5/ 1	7/ 2	10/ 2	10/14	7	141
42°15′	N. Y.	1,500	5/17	5/19	5/16 to 5/30	5/10	6/29	10/10	10/17	7	144
42°25′	N. Y.	750	5/ 8	5/13	4/30 to 5/20	5/ 2	7/ 2	10/19	10/12	9	159
43°35′	N. Y.	265	5/15	5/21	.....	5/ 6	.....	10/ 3	10/10	7	135
44°30′	(Canada)	25	5/28	6/ 9	.....	5/23	.....	10/20	9/21	2	133
44°40′	(Canada)	200	5/28	6/ 3	5/28 to 6/ 8	5/ 1	.....	10/ 9	10/11	2	128
47°30′	(Canada)	175	6/ 4	6/10	.....	.....	.....	10/20	10/18	3	132

TABLE 5. APPLE, BEN DAVIS. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
32° 0′	Miss.	400	4/ 7	4/12	4/10 to 4/15	4/11	6/15	8/25	.....	3	135
35°30′	Ark.	1,100	3/28	4/ 7	3/25 to 4/20	3/22	7/ 6	9/17	11/13	5	163
35°50′	Ark.	1,815	4/ 4	4/11	3/24 to 4/24	3/27	7/ 5	10/ 7	11/ 3	8	179
36°12′	Ark.	1,500	3/30	4/ 9	3/20 to 4/25	3/30	.....	9/24	10/18	9	168
36°15′	Ark.	1,250	3/30	4/ 7	3/23 to 4/25	4/ 6	7/14	9/23	10/25	19	169
36°15′	Ark.	500	4/ 3	4/ 7	3/31 to 4/18	3/28	.....	9/27	10/24	6	173
38°30′	Mo.	560	.....	4/13	3/20 to 4/28	4/ 7	8/22	9/20	.....	5	160
39°25′	Mo.	466	4/13	4/19	4/ 8 to 4/26	4/ 1	8/26	10/13	10/17	5	177
39°30′	Mo.	1,000	4/13	4/25	4/ 6 to 5/10	4/13	7/ 1	10/10	10/22	7	168
40°10′	Mo.	1,000	4/23	4/30	4/ 7 to 5/13	4/17	.....	10/12	10/12	8	165
40°35′	Ia.	1,100	4/22	5/ 1	4/ 9 to 5/14	4/20	8/15	10/ 7	10/22	12	159
42°15′	Ia.	1,116	5/ 2	5/13	4/25 to 5/29	4/18	7/17	10/10	10/ 3	9	150
43°35′	Minn.	1,200	5/18	5/22	4/29 to 6/12	5/ 6	7/27	10/15	10/ 8	8	146

TABLE 6. APPLE, YELLOW TRANSPARENT. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33° 0′	Miss.	550	3/27	4/ 6	3/10 to 5/ 3	3/25	5/17	7/ 6	.....	2	91
35°50′	Ark.	1,815	4/ 5	4/10	3/27 to 4/21	4/ 1	7/ 3	7/20	11/ 3	7	101
36°15′	Ark.	500	3/29	4/ 6	3/30 to 4/ 6	3/24	.....	7/14	10/31	2	99
36°15′	Ark.	1,250	4/27	5/ 2	4/20 to 5/ 8	4/23	7/ 7	7/17	10/30	4	76
38°30′	Mo.	560	4/11	4/14	3/30 to 4/25	4/ 6	8/18	6/24	10/13	5	71
39° 0′	Mo.	700	4/21	4/26	3/30 to 5/ 1	4/ 6	7/ 1	7/ 3	10/ 8	3	68
39°30′	Mo.	1,000	4/13	4/23	4/ 4 to 5/10	4/15	6/23	7/12	10/24	8	80
40°10′	Mo.	1,000	4/25	4/30	4/ 9 to 5/11	4/16	6/10	7/18	10/13	7	79
41° 0′	Ia.	729	5/ 1	5/ 6	.....	4/20	.....	.....	9/27	3	.....
42° 0′	Ia.	1,050	4/26	5/ 5	4/15 to 5/20	4/23	7/13	7/27	10/12	15	83
44°30′	Minn.	1,200	5/16	5/20	4/15 to 6/11	5/ 9	7/21	8/21	10/10	22	93
47° 0′	Wis.	800	5/19	5/22	5/16 to 5/25	5/11	7/26	8/13	10/25	3	83

TABLE 7. APPLE, WINESAP. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33° 0′	Miss.	600	4/ 2	4/ 7	4/ 1 to 4/15	4/ 3	6/23	9/ 9	11/ 5	5	155
35° 6′	Ark.	750	3/31	4/11	4/ 4 to 4/17	3/22	6/ 6	9/20	11/ 6	4	162
36°15′	Ark.	1,250	4/ 1	4/ 5	3/24 to 4/25	3/30	7/ 4	9/29	10/19	18	177
38°30′	Mo.	560	4/12	4/16	3/21 to 4/28	4/ 7	8/22	9/27	10/13	5	164
39°25′	Mo.	466	4/13	4/19	4/ 8 to 4/26	3/31	8/29	11/ 1	10/19	5	196
40° 0′	Mo.	1,000	4/17	4/28	.....	4/13	.....	10/14	10/22	4	169
40°30′	Ia.	1,050	4/24	5/ 3	4/ 9 to 5/20	4/12	8/ 3	10/ 7	10/14	24	157
42° 0′	Ia.	890	5/ 7	5/12	.....	5/ 5	.....	.....	9/29	5	.....
43° 0′	Wis.	800	5/16	5/21	5/12 to 6/ 9	5/ 1	.....	10/ 2	10/ 5	4	134

TABLE 8. APPLE, BEN DAVIS. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33° 0′	Calif.	4,300	4/ 8	4/19	3/20 to 5/10	4/12	.....	10/18	10/15	11	182
38°50′	Calif.	420	3/26	4/ 7	3/30 to 4/14	3/16	7/15	11/15	11/25	3	222
39°10′	Calif.	65	3/26	4/ 3	3/29 to 4/11	3/29	5/26	9/24	11/ 4	7	174
39°40′	Calif.	1,500	3/18	4/ 5	3/10 to 4/30	4/11	8/15	10/ 7	.....	5	185
44° 0′	Ore.	254	4/19	4/25	4/15 to 5/ 4	3/28	7/25	10/11	11/ 6	4	169
44° 0′	Ore.	1,000	4/29	5/ 8	4/30 to 5/25	4/ 7	8/17	10/18	.....	4	163
44°30′	Ore.	3,300	5/ 7	5/20	5/12 to 5/28	4/28	9/18	11/ 6	.....	3	170
45° 0′	Ore.	500	4/26	5/ 1	4/22 to 5/10	4/ 9	8/27	10/20	11/ 3	6	172
46° 0′	Wash.	600	4/15	4/22	4/15 to 4/28	4/10	8/ 5	10/ 9	10/18	7	170
48°30′	Wash.	255	5/ 6	5/16	5/10 to 5/24	5/ 1	8/ 4	10/26	11/19	5	163

TABLE 9. APPLE, YELLOW TRANSPARENT. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33°20′	Calif.	4,500	4/ 8	4/13	3/20 to 4/23	4/16	.....	7/23	10/21	6	101
34° 0′	Calif.	3,800	3/20	4/ 4	3/14 to 4/ 4	3/29	7/ 1	8/ 1	10/ 7	2	119
43° 0′	Ore.	457	4/ 2	4/15	4/ 6 to 4/21	3/10	7/16	8/12	11/28	4	119
44° 0′	Ore.	195	4/20	4/25	4/15 to 4/28	3/22	7/ 5	7/25	11/ 2	5	91
44°30′	Ore.	800	4/22	4/29	4/20 to 5/ 7	4/12	8/ 2	8/ 1	11/ 1	5	94
46° 0′	Wash.	600	4/18	4/22	4/16 to 5/ 5	4/ 9	7/25	7/14	10/25	5	83
47° 0′	Wash.	60	4/25	5/ 2	4/18 to 5/10	4/17	7/15	8/ 2	11/13	11	92
48°30′	Wash.	255	5/ 3	5/13	5/ 9 to 5/20	5/ 1	7/30	8/19	11/17	5	98

TABLE 10. APPLE, WINESAP. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33° 0′	Calif.	3,000	4/13	4/19	4/10 to 5/ 1	3/30	.....	10/24	.....	4	188
33° 0′	Calif.	4,000	4/ 3	4/12	3/15 to 4/28	4/ 9	8/ 8	10/26	10/25	8	197
34° 0′	Calif.	3,800	3/24	4/ 5	3/15 to 4/24	4/ 1	7/ 1	9/30	11/ 7	2	178
34° 0′	Calif.	5,000	4/ 3	4/21	4/17 to 4/25	4/11	7/ 8	10/12	10/31	3	174
39°10′	Calif.	65	4/ 1	4/ 7	4/ 2 to 4/11	3/30	6/ 2	9/10	11/ 5	3	156
44° 0′	Ore.	254	4/17	4/23	4/13 to 4/30	3/24	7/16	10/11	11/15	4	171
44°30′	Ore.	3,300	5/13	5/27	5/20 to 5/31	4/28	9/25	11/10	.....	3	167
45° 0′	Ore.	500	4/30	5/ 4	4/24 to 5/ 9	4/15	8/15	10/18	11/ 3	3	167
47° 0′	Wash.	800	4/18	4/29	4/10 to 5/ 7	4/13	8/15	10/10	10/ 6	10	164
48°30′	Wash.	1,850	5/19	6/ 1	5/31 to 6/ 1	4/25	7/10	10/18	10/ 1	2	139

TABLE 11. PEAR, KIEFFER. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
29°40′	Fla.	75	3/ 2	3/10	2/13 to 3/16	3/ 4	.....	8/ 4	12/ 6	6	147
32°50′	Ga.	600	3/ 7	3/15	3/ 8 to 3/29	3/10	7/26	9/18	11/ 9	4	187
35° 0′	S. Car.	1,000	3/14	3/26	3/ 7 to 4/ 6	3/12	7/21	10/ 6	11/ 7	10	194
37°55′	Va.	200	3/22	4/ 4	3/12 to 4/25	4/14	.....	10/13	10/15	8	192
38°30′	Va.	450	4/11	4/16	4/ 2 to 4/26	4/ 9	7/26	10/ 5	10/15	6	172
41° 0′	Pa.	500	4/25	4/29	4/15 to 5/ 7	4/24	8/ 1	10/19	10/19	9	173
41° 0′	Pa.	1,000	4/23	5/ 2	4/12 to 5/13	4/23	8/ 9	10/12	10/13	7	163
42° 0′	N. Y.	120	5/ 4	5/ 9	4/25 to 5/17	5/ 5	6/20	10/ 1	10/14	11	145
42° 5′	N. Y.	940	5/13	5/17	5/12 to 5/20	5/10	7/10	10/12	10/ 9	7	148
42°25′	N. Y.	750	5/ 2	5/ 6	4/21 to 5/14	5/ 2	6/29	10/16	10/10	8	163
43°20′	N. Y.	500	5/ 7	5/12	4/29 to 5/19	5/ 3	7/26	10/10	10/18	5	151

TABLE 12. PEAR, BARTLETT. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
32°35′	Ga.	550	3/ 8	3/20	3/13 to 3/25	3/12	.....	9/10	11/10	3	174
35° 0′	S. Car.	1,000	3/17	3/26	3/14 to 4/ 2	3/12	7/25	8/10	11/17	7	137
37°20′	Va.	10	4/ 8	4/11	4/ 2 to 4/20	4/13	.....	7/31	10/16	3	111
37°55′	Va.	200	3/28	4/ 7	3/12 to 4/25	4/16	.....	8/29	10/15	8	144
38°30′	Va.	450	4/14	4/19	4/ 4 to 5/ 1	4/ 9	7/23	8/24	10/10	6	127
41° 0′	Pa.	500	4/30	5/ 2	4/16 to 5/12	4/25	8/10	8/22	10/19	10	112
41° 0′	Pa.	1,000	4/29	5/ 7	4/17 to 5/13	4/28	7/30	9/ 2	10/15	10	118
42° 0′	N. Y.	120	5/ 9	5/12	4/28 to 5/30	5/ 5	6/13	8/23	10/12	11	103
42° 5′	N. Y.	940	5/16	5/19	5/12 to 5/22	5/11	7/ 5	9/ 7	10/ 9	7	111
42°15′	N. Y.	1,500	5/11	5/15	5/ 4 to 5/22	5/ 8	7/ 3	9/ 9	10/17	7	117
42°25′	N. Y.	750	5/ 3	5/ 7	4/20 to 5/14	4/28	6/29	10/ 1	10/10	8	147
43°20′	N. Y.	500	5/11	5/14	4/30 to 5/21	5/12	7/11	9/ 2	10/18	5	111

TABLE 13. PEAR, ANGOULEME. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
37°20′	Va.	10	4/ 2	4/ 6	3/27 to 4/12	4/ 5	.....	9/ 3	10/16	3	150
37°55′	Va.	200	3/27	4/ 5	3/12 to 4/25	4/16	.....	9/ 6	10/10	7	154
41° 0′	Pa.	340	4/24	4/29	4/20 to 5/ 8	4/25	.....	9/20	10/18	5	144
42°15′	N. Y.	1,500	5/10	5/14	5/ 3 to 5/20	5/ 7	7/ 4	10/ 1	10/17	7	140
42°25′	N. Y.	750	5/ 3	5/ 7	4/20 to 5/14	4/29	6/29	10/ 1	10/10	8	147
42°45′	N. Y.	900	5/29	6/ 4	5/10 to 6/25	.....	6/ 7	10/11	10/20	6	129

TABLE 14. PEAR, KIEFFER. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
34°20′	Ark.	250	3/ 3	3/ 8	3/ 6 to 3/10	3/ 7	6/18	10/ 1	11/15	2	207
35°50′	Ark.	1,800	3/25	3/31	3/10 to 4/11	3/21	7/ 2	9/10	11/ 3	8	163
36°15′	Ark.	1,250	3/17	3/22	3/11 to 3/29	3/22	7/ 6	9/18	10/28	7	180
36°30′	Ark.	550	4/ 6	4/12	3/30 to 4/25	4/ 9	.....	9/20	10/10	3	161
38° 0′	Mo.	1,000	3/29	4/ 2	3/24 to 4/18	3/27	6/ 2	10/ 7	10/20	6	188
38°30′	Mo.	550	4/ 1	4/ 8	3/25 to 4/23	3/29	7/23	9/10	10/19	10	155
39° 0′	Mo.	800	4/12	4/16	3/26 to 5/ 4	4/10	6/21	9/28	10/11	14	164
41° 0′	Ia.	900	4/22	4/29	4/ 6 to 5/22	4/26	.....	10/ 7	10/ 6	14	161
42° 0′	Ia.	800	4/28	5/ 4	4/27 to 5/10	4/27	6/21	10/ 1	10/10	7	150
43° 0′	Wis.	900	5/11	5/18	5/11 to 5/24	5/ 4	5/15	10/ 3	10/ 4	5	138

TABLE 15. PEAR, BARTLETT. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
35° 0′	Ark.	500	3/20	3/25	3/20 to 3/30	3/18	.....	.....	10/16	2	.....
36°20′	Ark.	1,300	3/12	3/25	3/15 to 4/ 2	3/26	6/20	8/ 3	10/30	5	131
39° 0′	Mo.	800	4/24	4/28	4/19 to 5/ 7	4/19	6/ 8	8/11	10/13	5	105
39°25′	Mo.	466	4/ 9	4/13	3/26 to 4/26	4/ 4	8/11	9/ 3	10/16	9	143
41° 0′	Ia.	800	4/16	4/22	4/ 6 to 5/ 7	4/15	.....	.....	10/18	4	.....
43° 0′	Wis.	850	5/ 8	5/14	5/ 9 to 5/23	5/ 2	7/10	9/14	10/ 8	5	123

TABLE 16. PEAR. ANGOULEME. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
36°20′	Ark.	1,500	3/15	3/27	3/16 to 4/ 7	3/26	8/ 4	9/ 8	10/17	2	165
38° 0′	Mo.	1,000	3/31	4/ 5	3/24 to 4/19	3/31	6/ 3	9/17	10/18	7	165
38°30′	Mo.	550	4/ 7	4/11	3/26 to 4/26	4/ 1	7/19	9/ 2	10/19	9	144
39° 0′	Mo.	800	4/ 6	4/12	3/20 to 5/ 7	4/ 4	6/20	9/16	10/13	12	157
41° 0′	Ia.	900	4/26	5/ 1	4/22 to 5/ 9	4/17	.....	.....	10/ 2	5	.....
42° 0′	Ia.	650	4/30	5/ 6	4/27 to 5/ 8	4/30	7/ 8	10/ 6	10/10	6	153

TABLE 17. PEAR. BARTLETT. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33°10′	Calif.	3,300	3/22	4/ 1	3/25 to 4/ 8	3/13	.....	9/10	.....	4	162
33°45′	Calif.	150	3/21	3/27	3/17 to 4/ 8	3/22	.....	9/17	12/ 2	5	174
38° 0′	Calif.	200	3/20	4/ 1	3/25 to 4/ 8	3/22	.....	7/25	11/21	8	115
39° 0′	Calif.	2,200	3/28	4/ 2	3/27 to 4/12	4/13	.....	8/19	.....	4	139
39°40′	Calif.	1,300	3/ 9	3/28	3/12 to 4/15	4/ 4	8/14	9/14	.....	5	170
39°45′	Calif.	4,500	4/12	4/22	3/28 to 5/25	4/24	8/31	8/11	11/18	3	111
43°15′	Ore.	400	3/26	4/ 6	3/18 to 4/12	3/19	7/11	8/29	11/29	6	145
44°30′	Ore.	700	4/10	4/26	4/ 1 to 4/30	4/11	8/ 9	9/ 6	11/26	8	133
45° 0′	Ore.	3,000	5/ 2	5/12	5/ 3 to 5/20	4/28	9/13	9/20	11/23	3	131
45° 0′	Ore.	500	4/11	4/16	3/25 to 4/26	4/16	8/15	8/28	10/16	8	134
45°45′	Wash.	100	4/11	4/17	4/10 to 4/24	4/13	7/ 6	8/23	11/11	8	128
46°30′	Wash.	550	4/16	4/24	4/18 to 5/ 8	4/12	8/ 9	8/22	10/11	7	120
47°20′	Wash.	20	4/14	4/20	4/ 7 to 4/26	4/21	7/12	8/22	11/22	8	124
49°15′	(Canada)	1,800	4/30	5/ 7	5/ 3 to 5/10	4/28	.....	9/15	9/28	2	131

TABLE 18. PEAR, WINTER NELIS. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33°10′	Calif.	3,300	3/20	3/27	3/20 to 4/ 1	3/10	.....	11/22	.....	4	240
33°45′	Calif.	150	3/25	4/ 3	3/18 to 4/20	3/25	.....	10/15	12/ 2	5	195
38°20′	Calif.	100	3/16	3/26	3/18 to 4/ 1	3/20	.....	9/22	11/ 7	3	180
39°40′	Calif.	1,300	3/ 8	3/26	3/10 to 4/ 6	4/ 2	8/14	10/11	.....	5	199
43°15′	Ore.	400	4/ 5	4/13	3/25 to 4/25	4/ 3	7/ 9	10/10	11/ 9	5	180
44°30′	Ore.	700	4/11	4/19	4/ 5 to 4/30	4/ 2	7/25	10/19	10/13	7	183
45° 0′	Ore.	500	4/21	4/27	4/13 to 5/ 6	4/25	8/ 1	10/20	11/ 3	4	182
45°45′	Wash.	100	4/13	4/21	4/15 to 4/28	4/19	7/ 6	11/ 5	10/18	5	198
46°30′	Wash.	500	4/20	4/27	4/20 to 5/ 5	4/15	9/15	10/18	9/18	6	174
47°15′	Wash.	20	4/15	4/20	4/13 to 5/ 2	4/26	7/14	10/29	10/29	3	192

TABLE 19. PEAR, ANJOU. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33°10′	Calif.	3,000	3/20	3/31	3/25 to 4/ 7	3/ 8	.....	9/18	.....	4	171
40° 0′	Calif.	1,800	4/ 6	4/19	4/10 to 4/28	4/24	7/25	9/12	.....	2	146
44° 0′	Ore.	400	3/27	4/ 2	3/18 to 4/23	3/21	7/19	9/10	12/ 4	5	161
44°30′	Ore.	200	4/ 6	4/10	4/ 4 to 4/19	3/15	7/ 6	.....	11/13	5	.....
45° 0′	Ore.	3,100	5/ 1	5/10	5/ 5 to 5/14	4/24	9/15	9/26	11/ 3	2	139
47°15′	Wash.	20	4/12	4/17	3/29 to 4/24	4/20	7/ 8	9/22	11/12	9	158
48° 0′	Wash.	100	4/20	4/30	4/21 to 5/20	4/22	.....	9/10	11/27	3	133

TABLE 20. PEACH, ELBERTA. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
30°20′	Fla.	25	2/23	3/12	3/ 3 to 3/16	3/10	.....	7/ 9	.....	4	119
32° 0′	Ga.	500	3/ 5	3/19	3/ 2 to 3/18	3/10	7/ 1	7/ 6	10/27	12	109
33°45′	Ga.	1,000	3/ 5	3/13	2/20 to 3/25	3/ 5	7/23	7/16	11/14	10	125
37°55′	Va.	200	4/ 3	4/10	3/27 to 4/23	4/13	.....	8/11	10/13	8	123
40° 0′	Pa.	900	4/23	4/29	4/17 to 5/10	4/25	7/13	8/23	10/11	7	116
41° 0′	Pa.	1,000	4/24	4/29	4/21 to 5/10	4/30	8/30	9/ 2	10/15	5	126
42° 0′	N. Y.	300	5/ 1	5/ 6	4/27 to 5/ 8	5/ 1	7/19	9/ 6	10/18	6	123
42°25′	N. Y.	750	4/30	5/ 4	4/20 to 5/10	4/28	7/31	9/10	10/10	8	129

TABLE 21. PEACH, EARLY CRAWFORD. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
32° 0′	Ga.	450	3/16	3/20	3/20 to 3/21	3/30	5/20	6/29	11/15	2	101
33°15′	Ga.	1,000	3/ 9	3/19	3/ 5 to 3/26	3/ 7	.....	7/ 1	11/ 1	7	104
37°55′	Va.	200	4/ 3	4/11	3/28 to 4/23	4/16	.....	7/29	10/18	9	109
40° 0′	Pa.	900	4/23	4/29	4/14 to 5/ 8	4/25	7/13	8/16	10/15	8	109
41° 0′	Pa.	1,000	4/30	5/ 3	4/24 to 5/10	5/ 5	9/ 1	8/25	10/15	5	114
42° 0′	N. Y.	300	4/29	5/ 3	4/25 to 5/ 5	4/26	7/15	8/22	10/17	7	111
42°30′	N. Y.	825	5/ 7	5/11	4/20 to 6/10	5/10	7/30	9/ 3	10/22	12	115
44°40′	(Canada)	150	5/11	5/17	5/ 8 to 5/24	5/ 9	8/30	9/ 5	10/10	4	111

TABLE 22. PEACH, CHAMPION. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33°15′	Ga.	1,000	3/ 9	3/18	3/10 to 3/25	3/10	.....	7/15	11/22	7	119
40° 0′	Pa.	950	4/22	4/27	4/15 to 5/ 9	4/30	6/25	8/21	10/18	3	116
40°40′	W. Va.	1,100	4/18	4/22	4/10 to 5/ 2	4/27	8/ 8	8/15	.....	4	115
42° 0′	N. Y.	300	5/ 1	5/ 6	5/ 4 to 5/ 8	4/26	7/12	8/23	10/15	6	109
43° 0′	N. Y.	500	5/10	5/15	5/ 6 to 5/25	5/19	.....	8/26	10/24	5	103

TABLE 23. PEACH, ELBERTA. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
31°30′	Miss.	200	2/24	3/12	2/28 to 3/20	3/14	7/ 4	7/ 5	11/ 3	3	115
34°45′	Miss.	500	3/ 4	3/15	3/ 7 to 3/22	3/ 9	.....	7/26	10/30	6	133
35° 6′	Ark.	650	3/ 1	3/ 6	2/18 to 3/17	3/ 6	7/13	7/11	11/ 6	4	127
35°50′	Ark.	1,800	3/20	3/25	3/14 to 4/ 9	3/23	7/16	8/17	11/ 3	8	145
36°15′	Ark.	1,250	3/15	3/25	3/11 to 4/ 7	3/19	7/16	7/30	10/30	16	127
39° 0′	Mo.	700	4/ 4	4/ 8	3/20 to 4/29	3/30	7/30	8/25	10/16	25	139
40°35′	Ia.	1,000	4/ 9	4/16	4/ 1 to 4/25	4/11	7/25	9/15	10/18	6	152
41° 0′	Ia.	729	4/15	4/25	4/20 to 4/27	4/25	.....	9/ 3	10/11	4	131

TABLE 24. PEACH, EARLY CRAWFORD. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33° 0′	Miss.	300	3/ 6	3/14	3/ 1 to 3/28	3/16	7/15	6/19	11/ 9	6	97
34° 0′	Ark.	500	3/12	3/20	3/15 to 3/24	3/19	8/15	7/15	10/16	2	117
36° 0′	Ark.	1,300	3/15	3/21	3/15 to 3/30	3/23	.....	7/ 5	10/31	4	106
36°15′	Ark.	1,250	3/13	3/19	3/10 to 4/ 9	3/22	7/13	7/14	10/27	8	117
39° 0′	Mo.	650	4/ 4	4/ 8	3/27 to 4/21	4/ 2	7/13	8/11	10/14	10	125
39° 0′	Mo.	700	4/ 3	4/ 5	3/27 to 4/19	4/ 5	7/29	8/16	10/14	7	133
41° 0′	Ia.	729	4/20	4/23	4/20 to 4/27	4/18	.....	.....	10/ 7	3	.....

TABLE 25. PEACH, CHAMPION. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
34°45′	Miss.	500	3/ 7	3/16	3/ 5 to 3/27	3/11	.....	7/ 2	10/30	6	108
35° 0′	Ark.	1,200	3/11	3/19	3/10 to 4/ 1	3/11	.....	7/13	10/10	6	116
39° 0′	Mo.	700	4/ 5	4/10	3/20 to 5/ 1	3/29	8/12	8/22	10/16	14	134
40°35′	Ia.	1,000	4/ 9	4/17	4/ 1 to 4/26	4/14	7/25	8/ 8	10/20	7	113

TABLE 26. PEACH, ELBERTA. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33°45′	Calif.	150	3/11	3/18	3/ 3 to 3/28	3/15	.....	8/ 6	11/20	7	141
45°30′	Ore.	200	4/ 8	4/14	4/ 9 to 4/18	4/12	.....	9/ 1	11/15	2	140
45° 0′	Ore.	3,300	5/ 9	5/22	5/10 to 5/29	5/ 5	9/17	10/7	11/ 3	3	138
47° 0′	Wash.	900	4/ 4	4/12	4/ 3 to 4/19	4/10	8/30	8/29	10/19	7	139
48° 0′	Wash.	650	4/15	4/29	4/15 to 5/ 3	4/19	8/ 7	8/29	10/15	8	122
48°30′	Wash.	1,800	4/26	4/28	4/20 to 5/18	4/15	7/30	9/30	10/20	3	155

TABLE 27. PEACH, EARLY CRAWFORD. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33°45′	Calif.	150	3/ 4	3/21	3/ 3 to 4/ 6	3/19	.....	7/17	.....	4	118
38°30′	Calif.	150	2/24	3/ 3	2/27 to 3/13	3/ 7	.....	7/ 6	.....	5	125
39°30′	Calif.	900	3/ 7	3/18	3/ 3 to 4/ 1	3/23	7/28	7/19	11/24	5	123
39°40′	Calif.	1,500	3/ 5	3/25	.....	3/23	7/29	8/10	.....	6	138
43°15′	Ore.	450	3/14	3/26	3/ 9 to 4/10	3/18	7/28	8/ 8	11/16	9	135
45°30′	Ore.	200	3/31	4/ 8	3/27 to 4/17	4/ 8	.....	7/29	11/ 1	3	112
46° 0′	Ore.	3,300	5/ 5	5/18	5/10 to 5/28	4/30	.....	9/18	11/ 3	3	123
47° 0′	Wash.	900	4/ 5	4/13	4/ 3 to 4/18	4/ 3	.....	8/11	10/12	3	120
48° 0′	Wash.	650	4/17	4/22	4/14 to 5/ 2	4/21	8/ 4	8/22	10/25	5	122

TABLE 28. PEACH, ALEXANDER. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33°45′	Calif.	150	3/15	3/24	3/ 8 to 4/18	3/28	.....	7/19	11/24	4	117
38°35′	Calif.	800	3/11	3/28	3/25 to 4/ 1	4/ 5	7/18	6/29	11/ 4	5	93
43°15′	Ore.	450	3/17	3/27	3/18 to 4/15	3/21	8/ 7	7/ 4	9/24	3	99
45°30′	Ore.	200	4/ 3	4/10	3/27 to 4/28	4/12	.....	7/15	11/ 7	5	96
45°30′	Ore.	1,000	3/16	3/21	3/15 to 4/ 3	3/28	.....	7/ 5	10/ 5	3	106
47° 0′	Wash	900	4/ 6	4/12	4/ 1 to 4/17	4/ 5	.....	7/ 8	10/18	4	87
48° 0′	Wash.	650	4/18	4/25	4/18 to 5/ 2	4/21	.....	7/14	10/28	5	80

TABLE 29. CHERRY, EARLY RICHMOND. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
36° 0′	N. Car.	2,500	4/30	4/10	3/18 to 4/25	4/ 6	7/ 4	6/30	10/13	5	81
37°25′	Va.	1,400	4/11	4/18	4/ 2 to 4/27	4/18	7/15	6/11	10/25	5	54
37°30′	W. Va.	3,000	4/17	4/24	4/ 9 to 5/ 7	4/21	.....	.....	10/13	5	.....
38° 0′	Va.	300	4/ 8	4/14	4/ 1 to 5/ 1	4/18	.....	6/19	10/23	8	66
40°30′	Pa.	1,250	4/20	4/25	4/15 to 5/ 8	4/17	6/16	6/16	10/20	6	52
41° 0′	Pa.	900	4/28	5/ 3	4/16 to 5/ 9	4/29	7/19	6/15	10/22	7	43
42° 5′	N. Y.	120	5/ 2	5/ 8	4/25 to 5/14	5/ 1	6/12	6/18	10/20	5	41
42°15′	N. Y.	1,500	5/10	5/14	5/ 5 to 5/20	5/10	6/28	6/30	10/17	7	47
42°25′	N. Y.	750	5/ 2	5/ 6	5/ 1 to 5/15	4/26	6/30	6/23	10/11	5	48
43°20′	N. Y.	500	5/10	5/13	5/ 1 to 5/25	5/ 8	.....	7/ 5	10/17	5	53
47°30′	(Canada)	175	5/31	6/ 4	5/28 to 6/11	.....	.....	7/30	10/25	3	56

TABLE 30. CHERRY, MONTMORENCY. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
37°50′	W.Va.	3,000	4/18	4/26	4/10 to 5/ 8	4/19	.....	.....	10/13	5	.....
38°45′	Va.	375	4/16	4/18	4/ 7 to 5/ 1	4/18	.....	6/ 8	10/17	5	51
41° 0′	Pa.	1,250	5/ 1	5/ 6	4/13 to 5/18	4/28	6/17	7/ 3	10/12	9	58
42° 0′	N. Y.	300	5/ 3	5/ 7	4/23 to 5/15	5/ 1	7/28	7/ 8	10/15	6	62
42° 5′	N. Y.	120	4/28	5/ 2	4/22 to 5/ 8	4/27	7/28	7/ 6	10/14	3	65
42°15′	N. Y.	1,500	5/11	5/16	5/ 8 to 5/22	5/11	6/27	7/10	10/15	6	55
43°20′	N. Y.	500	5/ 8	5/14	4/28 to 5/22	5/10	7/31	7/10	10/17	5	57
47°30′	(Canada)	175	5/31	6/ 6	5/27 to 6/11	.....	.....	.....	10/25	3	.....

TABLE 31. CHERRY, ENGLISH MORELLO. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
38° 0′	Va.	300	4/14	4/16	4/ 1 to 5/ 3	4/20	.....	7/25	10/22	10	100
41°30′	Pa.	1,250	4/26	4/30	4/24 to 5/ 4	4/18	7/ 3	7/11	10/20	3	72
42° 5′	N. Y.	120	5/ 5	5/ 9	4/26 to 5/15	5/ 1	.....	7/ 7	10/14	5	59
44°40′	(Canada)	200	4/23	5/13	5/ 1 to 5/24	4/27	.....	7/26	10/11	2	74

TABLE 32. CHERRY, EARLY RICHMOND. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
36° 0′	Ark.	1,200	4/ 1	4/ 7	3/24 to 4/20	4/ 8	.....	5/28	10/16	5	52
36° 0′	Ark.	475	3/25	4/ 3	3/27 to 4/10	3/23	.....	5/15	10/26	5	43
37°30′	Ill.	600	4/ 4	4/ 9	3/28 to 4/20	4/10	.....	5/28	10/14	6	49
37°40′	Kans.	1,300	4/ 2	4/ 9	3/30 to 4/23	4/ 8	.....	5/20	10/16	7	41
38°35′	Mo.	550	4/ 8	4/14	3/31 to 4/22	3/28	6/15	6/ 2	10/23	4	49
39° 0′	Mo.	625	4/14	4/21	3/27 to 5/ 4	4/12	6/19	6/ 8	10/20	12	48
40°10′	Mo.	900	4/20	4/27	4/ 7 to 5/ 7	4/18	6/17	6/ 7	10/13	8	41
41° 0′	Ia.	1,050	4/21	4/25	4/ 3 to 5/16	4/22	7/12	6/15	10/15	16	51
43° 0′	Wis.	850	5/ 8	5/15	5/ 3 to 5/15	5/ 2	7/ 8	7/ 8	10/ 3	6	54
44° 0′	Minn.	1,100	5/ 9	5/13	5/ 8 to 5/20	5/12	6/22	6/28	10/17	4	46

TABLE 33. CHERRY, MONTMORENCY. MISSISSSPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
36° 0′	Ark.	1,200	3/28	4/ 7	3/26 to 5/14	3/31	.....	6/10	10/16	3	64
37°45′	Ill.	450	4/ 5	4/10	3/29 to 4/25	.....	.....	6/16	.....	3	67
38°35′	Mo.	550	4/10	4/16	4/ 3 to 4/23	3/29	6/18	6/26	10/23	4	71
40°10′	Mo.	900	4/20	4/29	4/ 7 to 5/10	4/17	6/18	6/20	10/13	3	52
41° 0′	Ia.	729	4/19	4/24	4/11 to 5/ 6	.....	.....	.....	10/14	3	.....
44° 0′	Wis.	900	5/ 8	5/17	5/ 8 to 5/25	4/30	7/ 7	7/ 9	10/ 1	6	53

TABLE 34. CHERRY, ENGLISH MORELLO. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
34°15′	Ark.	1,100	3/23	3/29	3/25 to 4/ 1	3/25	.....	.....	10/25	3	.....
36° 0′	Ark.	1,500	4/ 8	4/12	4/ 5 to 4/17	4/ 4	6/26	6/ 2	10/10	3	51
38°35′	Mo.	550	4/13	4/21	4/ 6 to 5/ 2	3/29	6/20	.....	10/23	4	.....
39° 0′	Mo.	750	4/11	4/15	3/27 to 5/ 3	4/ 9	7/ 2	6/ 8	10/14	7	54
39° 0′	Ill.	512	4/17	4/22	4/ 6 to 5/ 2	4/15	6/15	6/22	10/29	5	61
41° 0′	Ia.	1,050	4/20	4/26	4/ 8 to 5/12	4/21	7/14	6/29	10/20	13	64
43° 0′	Wis.	850	5/10	5/18	5/ 8 to 5/25	5/ 3	.....	7/13	10/ 7	6	56
44° 0′	Minn.	1,000	5/20	5/20	5/10 to 5/25	5/12	7/22	7/ 5	10/ 7	3	46

TABLE 35. CHERRY, EARLY RICHMOND. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33° 0′	Calif.	3,500	3/19	4/ 2	3/20 to 4/12	4/ 4	.....	5/18	10/15	5	46
38°50′	Calif.	420	3/10	3/31	3/20 to 4/15	3/23	6/25	5/11	10/17	3	41
44°30′	Ore.	650	4/15	4/22	4/ 7 to 5/ 8	4/20	.....	7/ 1	.....	4	70
45° 0′	Ore.	270	4/ 5	4/14	4/ 7 to 4/19	4/ 7	.....	6/13	.....	4	60
47°15′	Wash.	20	4/17	4/23	4/13 to 5/ 1	4/27	7/15	6/28	11/12	12	66
48° 0′	Wash.	640	4/13	4/21	4/14 to 4/26	4/12	.....	6/23	10/ 9	4	63
48° 0′	Wash.	2,500	5/ 4	5/14	5/ 2 to 5/28	5/ 7	7/18	7/15	10/20	4	62
48°30′	Wash.	250	4/23	5/ 2	4/24 to 5/ 6	5/ 1	7/25	7/ 8	11/13	5	67

TABLE 36. CHERRY, NAPOLEON. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33° 0′	Calif.	3,500	3/21	3/30	3/ 5 to 4/18	4/ 3	.....	6/15	10/15	7	77
38° 0′	Calif.	200	3/18	3/31	3/15 to 4/ 8	3/31	.....	6/ 6	.....	13	67
39°40′	Calif.	1,450	3/22	3/31	3/ 2 to 4/15	4/ 5	8/15	7/ 3	12/ 3	4	94
44° 0′	Ore.	275	4/ 3	4/11	3/25 to 4/25	4/ 4	7/20	7/ 1	10/20	15	81
44° 0′	Ore.	1,000	4/ 7	4/18	4/12 to 4/25	4/15	7/24	7/ 5	.....	5	78
44°15′	Ore.	500	3/31	4/11	4/ 3 to 4/20	4/ 1	7/ 7	6/27	11/ 9	11	77
47°15′	Wash.	20	4/12	4/19	4/ 8 to 4/24	4/21	7/11	7/ 1	11/12	11	73
48° 0′	Wash.	640	4/10	4/18	4/15 to 4/25	4/11	.....	6/13	10/ 8	4	56
48° 0′	Wash.	2,500	5/ 2	5/ 9	5/ 1 to 5/15	5/ 1	7/14	7/ 7	11/ 1	3	59
48°30′	Wash.	255	4/22	5/ 3	5/ 1 to 5/ 5	4/28	7/19	7/23	11/13	4	81

TABLE 37. CHERRY, BLACK TARTARIAN. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33° 0′	Calif.	3,500	3/18	3/28	3/10 to 4/10	4/ 3	9/13	6/ 5	10/23	8	69
38° 0′	Calif.	200	3/18	3/27	3/14 to 4/ 7	3/28	.....	5/24	.....	11	58
38°50′	Calif.	420	3/ 8	3/26	3/24 to 3/28	3/17	6/25	5/14	11/17	3	49
39°10′	Calif.	65	3/13	3/20	3/11 to 4/ 1	3/ 7	5/16	5/ 6	11/23	7	47
44° 0′	Ore.	550	3/25	4/ 4	3/25 to 4/15	3/22	7/ 1	6/20	11/12	5	77
44°15′	Ore.	270	3/25	3/30	3/21 to 4/ 6	4/ 7	.....	6/ 5	11/16	3	67
45° 0′	Ore.	350	4/ 9	4/13	4/12 to 4/25	4/11	7/17	6/18	11/ 2	6	66
47°15′	Wash.	20	4/10	4/15	4/ 3 to 4/24	4/20	7/ 8	6/25	11/10	6	71
48° 0′	Wash.	350	4/13	4/22	4/16 to 4/25	4/20	7/20	6/26	11/ 7	7	65
48° 0′	Wash.	1,200	4/24	4/30	4/18 to 5/12	4/20	8/ 5	7/ 4	11/ 3	3	65

TABLE 38. PLUM, ABUNDANCE. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
32°35′	Ga.	550	3/10	3/15	3/ 9 to 3/21	3/15	.....	6/16	10/16	6	93
35° 0′	N. Car.	40	3/ 7	3/20	3/ 8 to 4/ 4	3/30	.....	7/ 6	10/24	6	108
37°30′	Va.	200	3/21	4/ 1	3/10 to 4/ 5	4/11	.....	7/21	10/15	9	111
38° 0′	Va.	18	3/24	3/29	3/22 to 4/ 6	3/26	.....	7/16	10/21	5	109
39° 0′	Va.	380	4/ 3	4/ 8	3/26 to 5/10	4/12	6/28	7/12	10/18	11	95
41° 0′	Pa.	700	4/20	4/26	4/ 9 to 5/14	4/23	7/17	7/26	10/14	8	91
41°30′	Pa.	1,250	4/26	5/ 3	4/13 to 5/12	5/ 2	.....	8/13	10/ 5	4	102
42° 0′	N. Y.	300	4/30	5/ 5	4/23 to 5/10	4/29	7/ 5	8/15	10/18	7	102
42° 5′	N. Y.	120	4/28	5/ 4	4/22 to 5/12	4/27	.....	8/13	10/24	5	101
42°15′	N. Y.	1,500	5/ 6	5/ 9	4/26 to 5/15	4/ 7	6/29	8/13	10/16	6	96
42°25′	N. Y.	750	5/ 1	5/ 6	4/28 to 5/10	4/30	7/ 4	8/13	10/14	5	99
43° 0′	N. Y.	460	5/ 3	5/ 6	5/ 1 to 5/15	5/12	.....	8/ 9	10/24	5	95

TABLE 39. PLUM, WILD GOOSE. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
35° 0′	N. Car.	2,100	3/20	3/27	3/16 to 4/10	3/29	7/ 5	7/13	10/17	5	108
36° 0′	N. Car.	40	3/16	3/25	3/10 to 4/ 4	3/23	7/15	6/21	10/26	5	88
38°45′	Va.	375	4/ 8	4/11	3/30 to 4/18	4/16	.....	7/ 5	10/19	8	85
40°30′	Pa.	1,200	4/20	4/24	4/12 to 5/ 6	4/14	.....	7/12	10/14	3	79
41° 0′	Pa.	700	4/27	5/ 2	4/14 to 5/14	5/ 1	7/29	7/27	10/17	7	86
42°35′	N. Y.	500	5/11	5/18	5/ 4 to 5/25	5/ 4	.....	.....	.....	9	.....

TABLE 40. PLUM, RED JUNE. ATLANTIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
32°35′	Ga.	550	3/15	3/19	3/13 to 4/ 5	3/19	.....	5/29	10/16	6	71
36° 0′	N. Car.	500	3/21	3/30	3/25 to 4/ 5	3/31	.....	6/27	.....	3	89
37°30′	Va.	200	3/24	3/30	3/15 to 4/20	4/ 7	.....	6/20	10/15	9	82
38°45′	Va.	375	3/29	4/ 2	3/26 to 4/11	4/13	6/30	7/ 1	10/19	8	90
41° 0′	Pa.	900	4/24	4/27	4/ 9 to 5/13	4/26	7/23	7/28	10/22	7	92
42° 0′	N. Y.	300	4/29	5/ 3	4/20 to 5/ 8	4/28	7/ 5	8/ 5	10/18	7	94
42° 5′	N. Y.	120	4/28	5/ 4	5/ 2 to 5/ 6	5/ 1	.....	7/22	10/21	3	79
42°15′	N. Y.	750	4/27	5/ 2	4/25 to 5/ 6	4/25	7/ 4	8/ 6	10/14	5	96

TABLE 41. PLUM, ABUNDANCE. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
31° 0′	Miss.	100	3/ 7	3/13	3/ 5 to 3/10	3/10	.....	6/15	11/14	3	94
33° 0′	Miss.	575	3/ 7	3/14	3/11 to 3/18	3/11	7/18	6/ 9	11/ 4	6	87
36° 0′	Ark.	800	3/27	4/ 5	3/27 to 4/20	3/31	.....	7/15	10/11	3	101
36°15′	Ark.	1,238	3/17	3/21	3/15 to 3/24	3/22	7/16	.....	10/28	4	.....
39°15′	Mo.	500	4/ 2	4/10	3/25 to 4/30	4/ 8	8/ 8	7/15	10/20	14	96
40°10′	Mo.	900	4/10	4/14	3/27 to 5/ 1	4/13	.....	8/ 2	10/ 5	6	110

TABLE 42. PLUM, WILD GOOSE. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
34°30′	Miss.	700	3/15	3/21	3/15 to 3/25	3/16	.....	6/11	.....	4	82
36° 0′	Ark.	550	3/20	3/29	3/20 to 4/15	3/27	.....	7/10	11/ 3	6	103
36°12′	Ark.	1,800	3/21	3/27	3/15 to 4/12	3/27	7/18	7/12	11/ 3	7	107
38°30′	Mo.	550	4/ 6	4/14	3/26 to 5/ 1	4/ 2	7/27	7/19	.....	9	96
38°40′	Mo.	800	4/ 4	4/ 7	3/22 to 4/18	4/ 8	.....	7/ 4	10/14	6	88
39° 0′	Mo.	700	4/ 8	4/13	3/29 to 4/29	4/ 3	7/18	7/19	10/14	7	97
41° 0′	Ill.	700	4/14	4/23	4/ 1 to 5/11	4/24	.....	7/24	10/13	19	92
42°15′	Ia.	1,116	4/24	5/ 1	4/ 8 to 5/14	4/14	.....	8/15	9/28	3	106

TABLE 43. PLUM, RED JUNE. MISSISSIPPI VALLEY. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
31° 0′	Miss.	100	3/ 4	3/13	2/28 to 3/25	3/10	7/10	6/15	11/16	4	94
32° 0′	Miss.	500	2/26	3/ 6	2/25 to 3/15	3/ 8	.....	6/15	11/18	4	101
35°25′	Ark.	550	3/ 4	3/10	3/ 6 to 3/15	3/ 9	.....	6/14	11/18	3	96
36° 0′	Ark.	1,200	3/17	3/24	3/18 to 3/30	3/26	.....	6/13	.....	6	81
39° 0′	Mo.	700	4/ 3	4/ 8	3/26 to 4/18	4/ 5	.....	7/12	10/16	4	95
39°15′	Mo.	500	3/31	4/ 3	3/22 to 4/16	3/28	8/18	7/ 2	10/15	10	90
39°30′	Ill.	625	4/10	4/14	4/ 3 to 4/23	4/10	.....	7/24	10/22	9	101

TABLE 44. PLUM, AGEN. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33°10′	Calif.	3,000	3/17	3/23	3/10 to 4/ 6	4/ 2	.....	9/25	.....	4	186
33°45′	Calif.	150	3/21	3/27	3/12 to 4/ 9	4/ 8	.....	8/21	.....	5	147
37°20′	Calif.	200	3/16	3/21	3/ 8 to 4/ 2	3/29	.....	8/12	.....	8	144
38°20′	Calif.	25	3/19	3/26	3/18 to 4/ 2	3/11	.....	8/19	10/31	4	146
38°25′	Calif.	250	3/15	3/27	3/12 to 4/ 2	3/27	7/25	8/21	.....	4	147
39°40′	Calif.	1,300	3/14	3/29	3/ 7 to 4/16	4/ 6	8/15	9/ 9	10/17	7	164
43° 0′	Ore.	450	4/ 1	4/ 7	3/30 to 4/17	4/ 5	7/ 6	9/ 4	11/15	6	150
44° 0′	Ore.	700	4/ 5	4/10	3/19 to 4/19	4/10	7/23	9/18	11/ 7	9	161
45° 0′	Ore.	200	4/ 1	4/10	3/15 to 4/20	4/10	.....	9/11	10/ 8	7	154
45° 0′	Ore.	3,000	4/27	5/10	5/ 3 to 5/20	5/ 1	9/18	9/23	.....	3	136
47° 0′	Wash.	20	4/14	4/23	4/14 to 4/30	4/30	.....	9/ 5	11/10	6	135
48° 0′	Wash.	200	4/20	4/30	4/10 to 5/15	4/27	7/23	9/ 5	10/11	6	128

TABLE 45. PLUM, ITALIAN PRUNE. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
39° 0′	Calif.	1,500	4/ 1	4/10	3/20 to 4/24	4/14	8/ 8	8/25	11/15	2	137
43° 0′	Ore.	450	4/ 5	4/11	4/ 5 to 4/18	4/ 9	7/ 5	9/13	11/ 3	6	155
44° 0′	Ore.	700	4/ 7	4/17	3/25 to 5/ 4	4/19	7/24	9/16	10/27	11	152
45° 0′	Ore.	200	4/ 2	4/11	3/25 to 4/20	4/12	.....	9/11	10/23	8	153
45° 6′	Ore.	3,000	4/27	5/10	5/ 3 to 5/20	5/ 2	.....	9/23	.....	3	136
45°45′	Wash.	250	4/ 7	4/15	4/ 4 to 4/21	4/15	.....	9/10	10/19	8	148
47° 0′	Wash.	15	4/16	4/23	4/11 to 5/ 2	4/30	7/10	9/11	11/10	12	141

TABLE 46. PLUM, WICKSON. PACIFIC STATES. AVERAGE FOR TEN YEARS, 1902 TO 1911

Approximate location (latitude)	State	Approximate elevation (feet)	Date of first bloom	Date of full bloom	Range of full-bloom dates	Date leaf bud begins to open	Date terminal bud forms	Date of picking	Date of first fall frost	Number of observations	Number of days from full bloom to picking
33° 0′	Calif.	565	3/ 5	3/16	3/10 to 4/10	3/27	.....	7/26	.....	7	132
38°20′	Calif.	25	2/26	3/10	3/ 3 to 3/17	3/10	.....	7/16	10/31	4	128
38°40′	Calif.	250	2/21	2/28	2/22 to 3/15	3/ 9	.....	7/ 2	.....	8	124
45° 0′	Ore.	3,000	4/25	5/ 5	4/27 to 5/15	4/25	9/ 5	9/19	.....	3	136